CHAPTER 2

Set-Up Procedures For Design

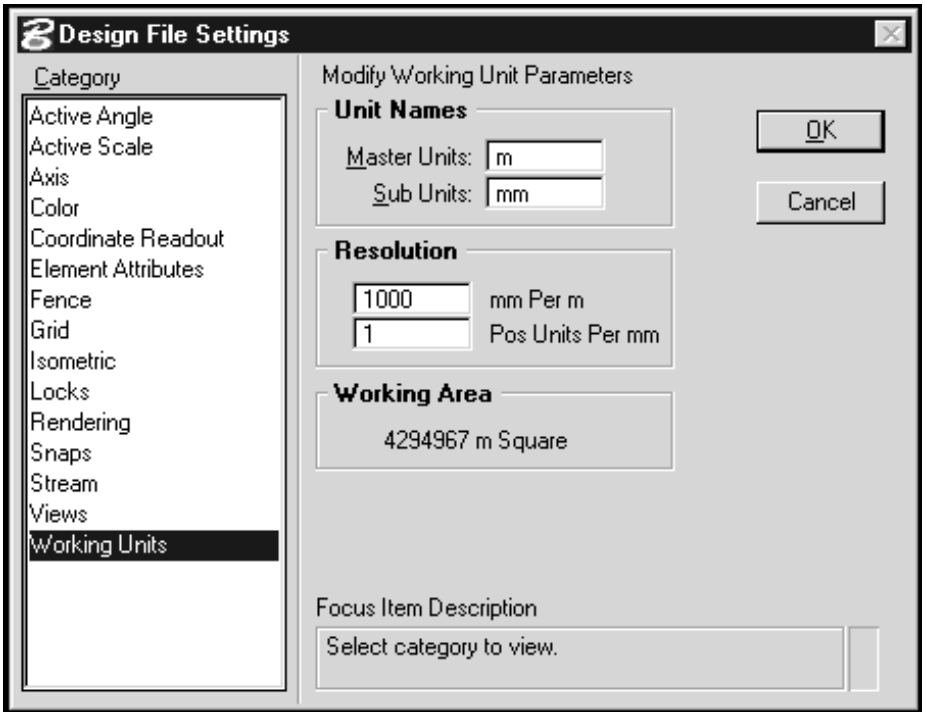
File Format

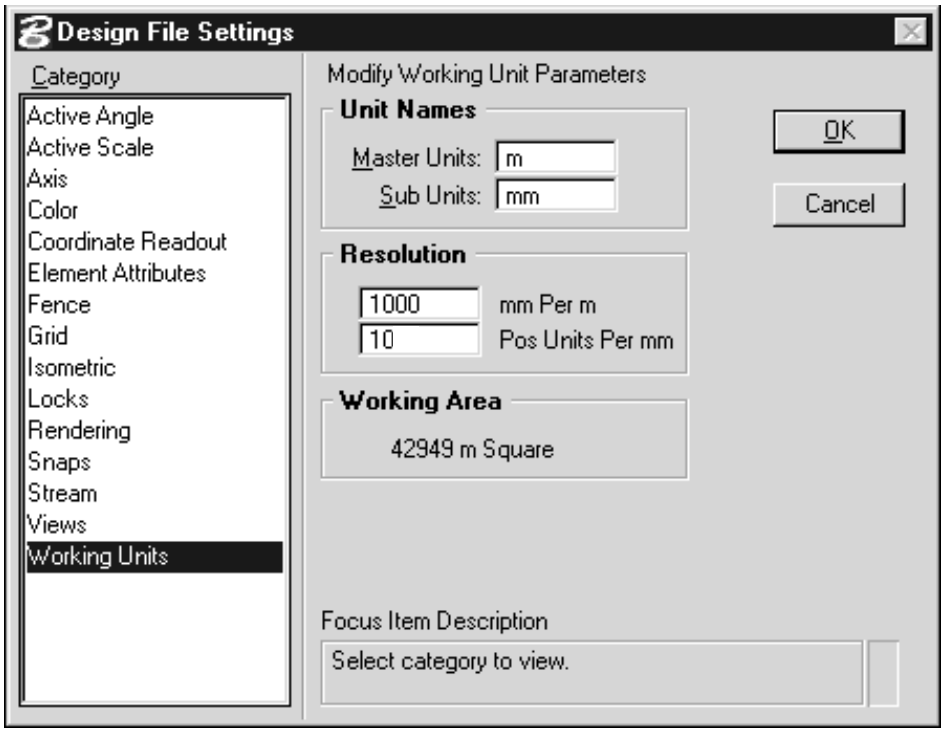
MicroStation Design files use a '.DGN' extension. MicroStation systems use a 'seed file' to create all successive design files. The 'seed file' provides standard parameters for each file created. This allows optimal accuracy and standardization. The 'seed file' parameters considered necessary to begin the design or edit session should include, but not be limited to, the parameters listed in this document. There are several other standards and parameters that the 'seed file' does not set. Non-seed file' parameters could include line weight, line style (that is, dashed, solid, etc.), color, and level assignment. The following narrative uses MicroStation specific commands and terminology to describe standardization with IDOT's use of CADD. The images used represent MicroStation Version 5.

Plan & Cross Section Files

Every operation during a 2D-design session takes place relative to a design plane. The design plane is a Cartesian coordinate system upon which the design resides. There is a finite number of 'UNITS OF RESOLUTION', or UOR's that reside within the design plane. These UOR's may be divided into an intelligent definition and assigned real world values. The values that IDOT uses are defined one time in the seed file.

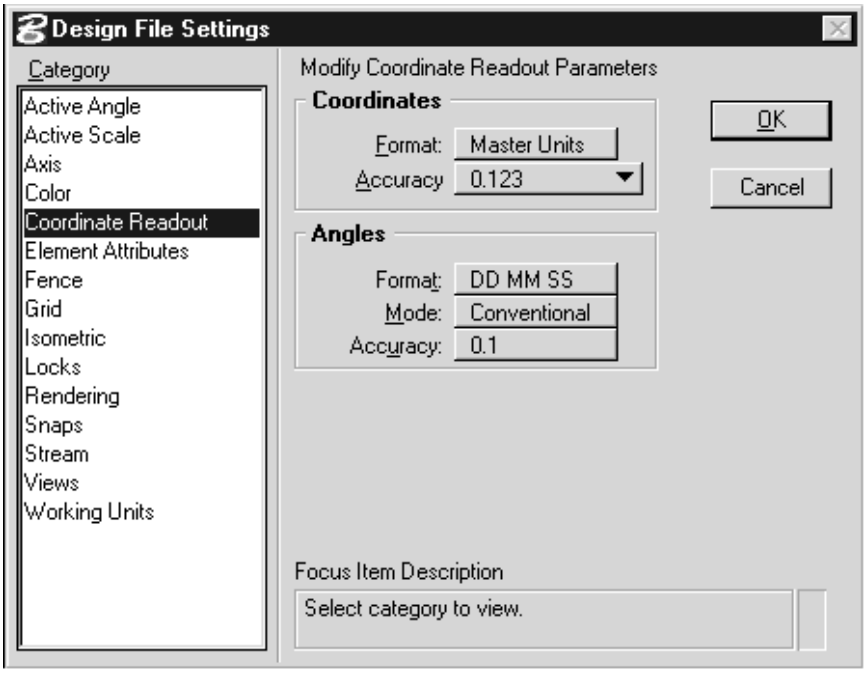
Format for the 'WORKING UNITS' is MU:SU:PU (Master Units, Sub Units, and Positional Units). There is a user-specified number of Sub Units per Master Unit and a user specified number of Positional Units per Sub Unit. The working units for plans are described by IDOT as 1 PU's per SU, and 1000 SU's per MU, with the Master Unit being one meter. This allows drawing precision to the nearest millimeter.



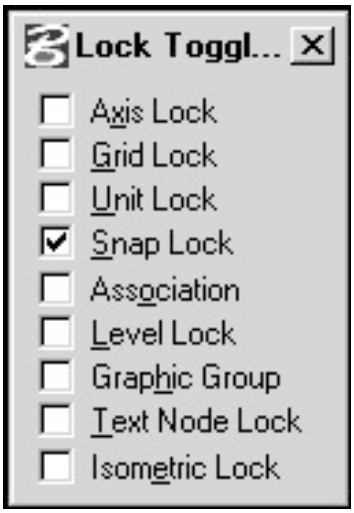


The working units for cross sections are described by IDOT as 10 PU's per SU, and 1000 SU's per MU, with the Master Unit being one meter. This allows drawing precision to the nearest tenth of a millimeter.

MicroStation allows the working units to be displayed in several different ways. The display specification may be reviewed or changed by selecting the 'settings' pull down menu and the coordinate readout dialog box. The format chosen by IDOT is decimal Master Units, having three significant digits to the right of the decimal point. In addition, within the same dialog box, angle format is selected specifying 'DEGREES, MINUTES, and SECONDS' to be used.



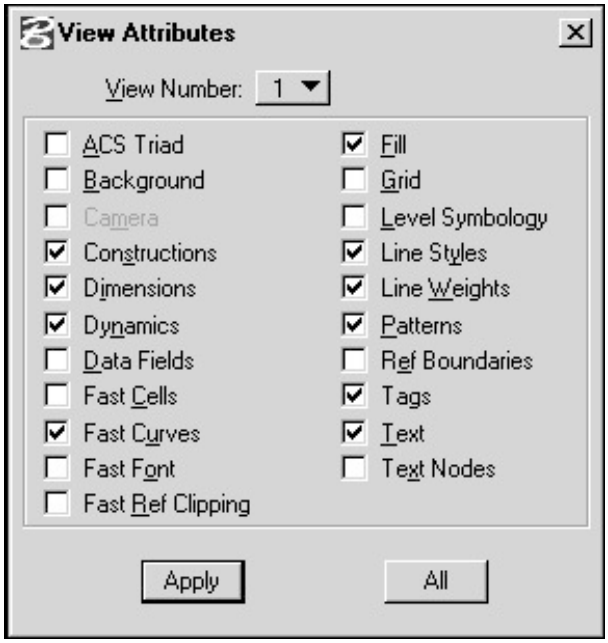
Rounding of numbers will occur during computations necessary for the design session to take place. Angle and Scale round-off values are specified using the coordinate readout dialog box. The IDOT specification is .0010 for Master Units and the specification for 'ANGLE ROUNDOFF' is 0°0'0.0"



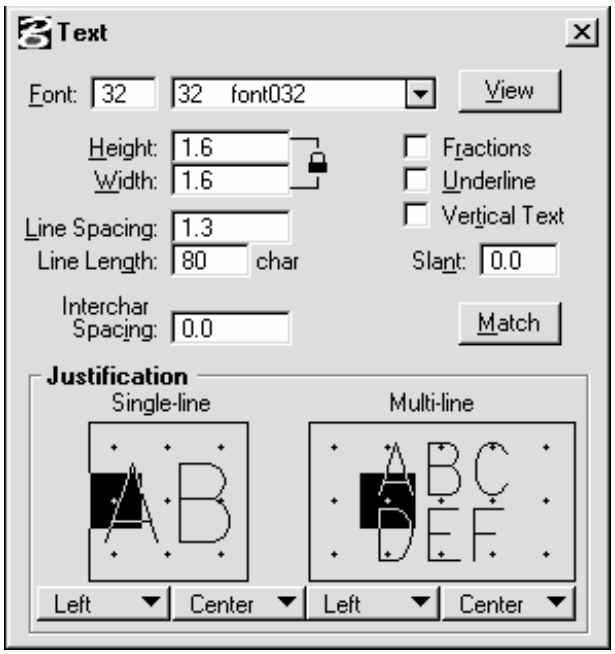
MicroStation uses a series of 'Locks'. All 'Locks' except 'SNAP KEYPOINT LOCK' should be toggled to the off position.

The ‘DISPLAY ON/OFF’ commands found in the **view attributes** dialog box permit certain classes of elements to be selectively eliminated from view in any ‘DESIGN FILE’. The following figure shows the display settings used in the IDOT ‘seed file’. The ‘seed file’ IDOT uses has the ‘GLOBAL ORIGIN’ set so the 0,0 is found the individual district) from State Plane Coordinates to reduce confusion over which coordinate system is being used.

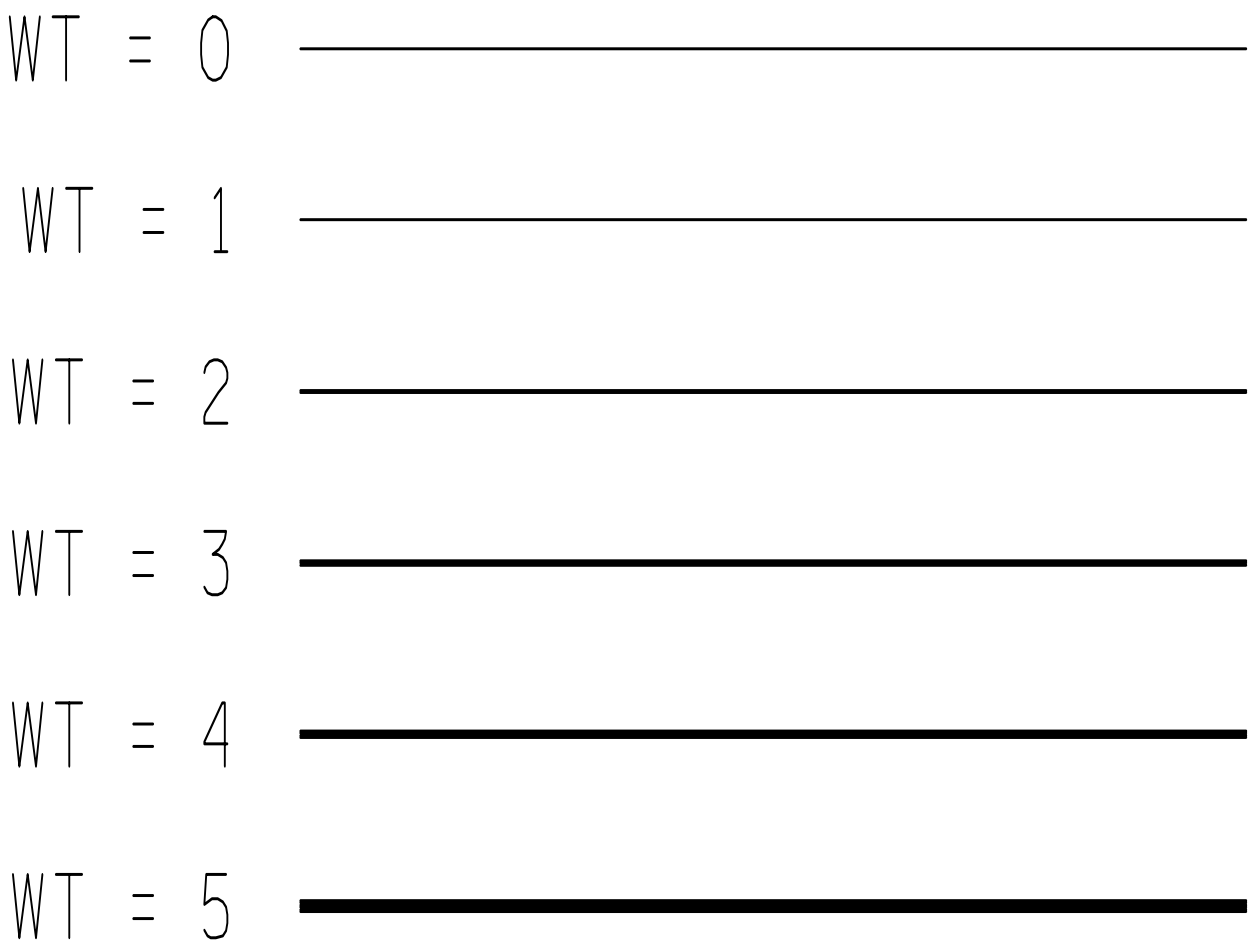
‘FAST DISPLAY’ is a mode that will allow selection of four graphic representations, cells, curves, text, and font to be displayed in an abbreviated form. The IDOT specification for displaying the above elements is a full representation of each element.



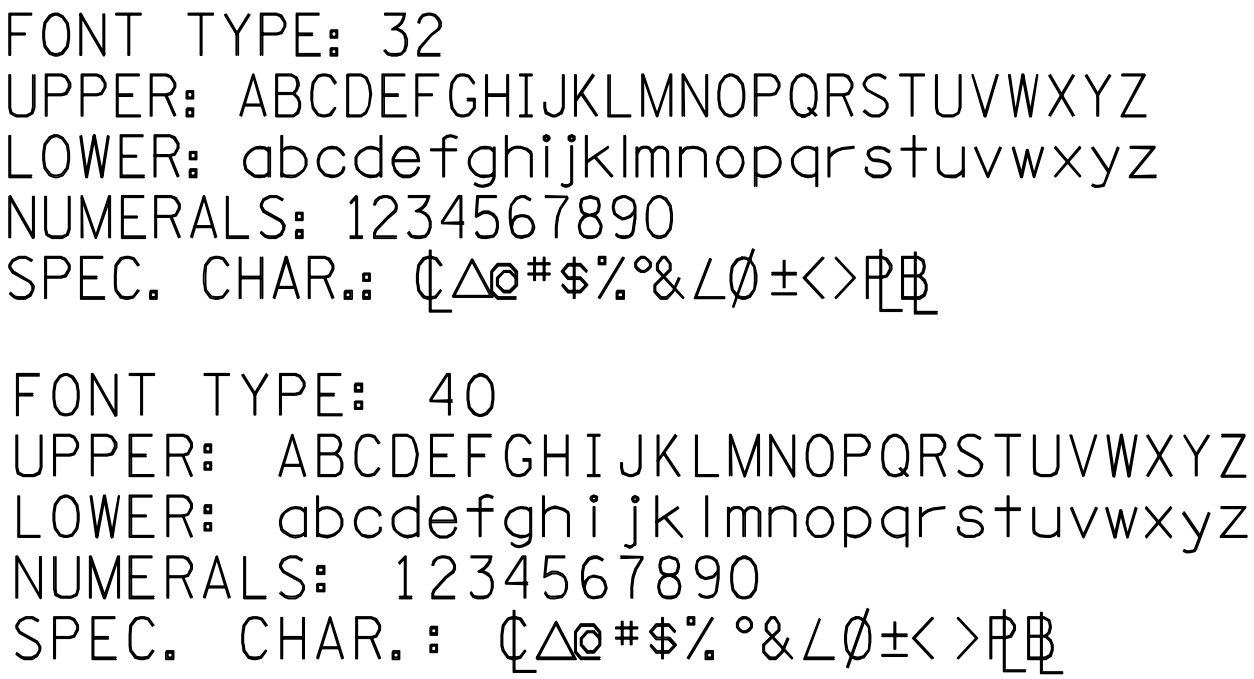
The ‘TEXT SIZE’ specification used in the ‘seed file’ is 1.6 meters in height, and 1.6 meters in width. ‘TEXT SIZE’ is 1.6 meters when drawing at a ratio of 1:500, the ‘TEXT SIZE’ should be changed as other scales are indicated. ‘TEXT SIZE’ size is selected using ‘TX= (value)’. ‘LINE SPACING’ is also a parameter described in the ‘seed file’ and is set at 1.3 meters using ‘LS= (value)’. The ‘TEXT NODE LINE LENGTH’ is set in the design file at a length of eighty characters. The values for ‘TEXT SIZE’, ‘LINE SPACING’ and ‘TEXT NODE LINE LENGTH’ are arbitrary values used to begin a design session; they are not necessarily standards for drafting.



Line Weight' is by IDOT definition a 'Non-Seedfile' parameter. 'Line Weight' can be described as line width ranging from the narrowest (weight 0) to the widest (weight 31). Line weight is changeable during an edit session using the key-in 'WT= (value)'. Differing line weights are necessary to describe and differentiate lines used to depict R.O.W.'s, easements, setbacks, properties, etc.



All design files created use a default font library. The IDOT default library is named ‘fontlib.rsc.’ Fonts most often used by IDOT are named 32, 40, and 115. Examples of the default font library are shown below.

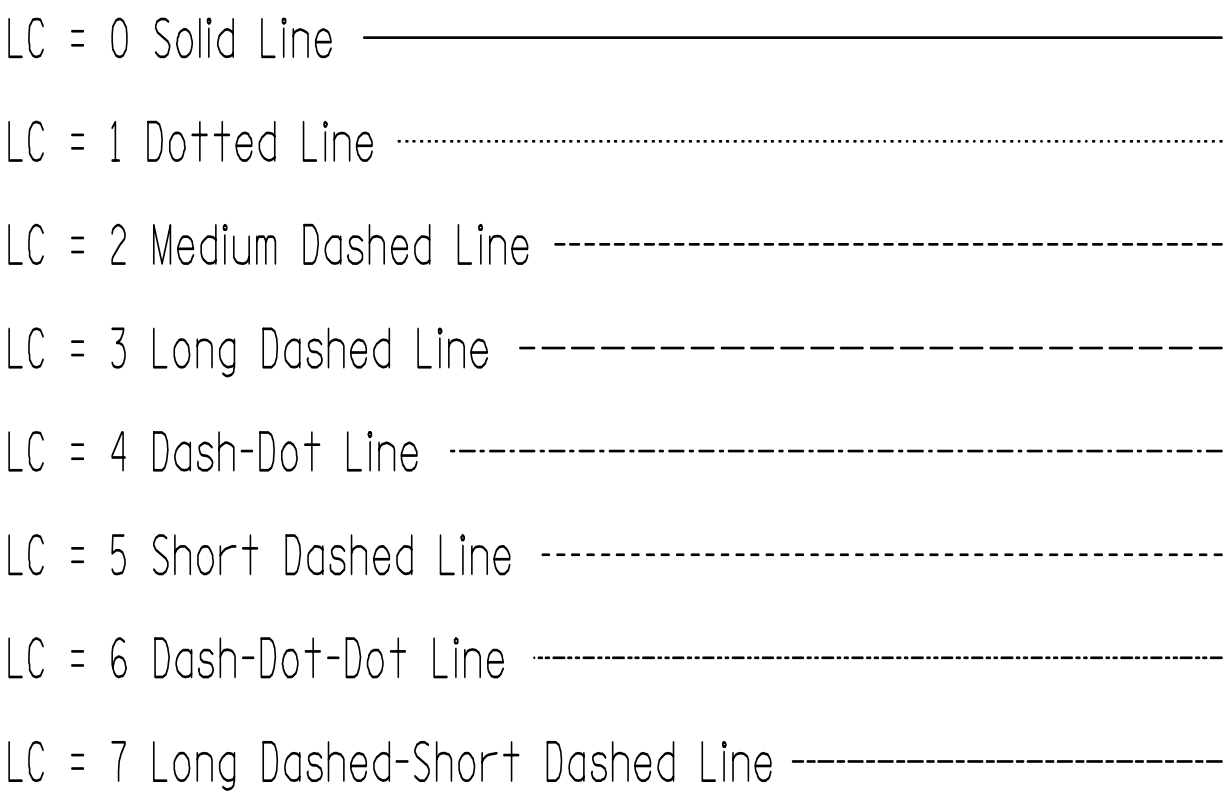


Colors are used by IDOT as an aid for the workstation operators. When a color is selected ‘CO = (value)’, a level is also selected LV = (value)’ where the value is the same for both specifications. The only exception to ‘color equals level’ occurs when levels fifty-seven and fifty-eight are used to place utilities.

In such case, the colors used should adhere to the standards set forth by the American Public Works Association, Utility Location & Coordination Council Uniform Color Code. Copies of the Uniform Color Code may be purchased from:

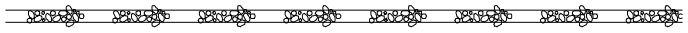
AMERICAN PUBLIC WORKS ASSOCIATION
1313 E. 60TH ST.
CHICAGO, IL 60637

'Line Code' is another user definable parameter used by IDOT to allow discrimination of line descriptions. 'Line Code' is keyed in using 'LC= (value)' and can define solid, dotted, medium dashed, long dashed, etc. There are a total of eight line codes described by MicroStation using digits zero through seven for selection.



IDOT has assigned specific user defined line styles for plan preparation and topographic data. Line styles have unique color, weight, and level based on their application. The Settings Manager provided by IDOT automates the selection and placement process for the user. A few line styles are shown below for examples. A complete list appears in Standard 000001 and in the Settings Manager. Many times the same line style applies to both existing and proposed work but will appear different due to color, weight, and level.

Paved Ditch e1250 lv = 37

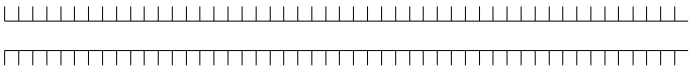


Railroad e0134 lv = 38

Fence e0493 lv = 8

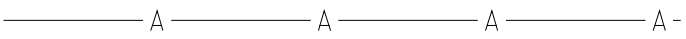
Shrubs code C & D e0595 lv = 23

Noise Attn./Levee e0111 lv = 8



Guardrail e0107 lv = 28

Elec. Aerial Cable e0726 lv = 15



Settings manager (sm99e.stg for English and sm99m.stg for metric) provides access to project standard drawing components and settings. It is a drawing management tool to control cell placement, project symbology, custom line styles, scales and working units. The settings manager allows the designer to work in specific groups according to level requirements and to provide accuracy in placement of both existing and proposed data. The four primary actions the settings manager controls are cell placement, area patterning, text placement and line or line style placement. The scale settings (scales.stg) control the output to keep all the components in the same relative scale. The current settings manager and its related files, such as the abbreviation glossary and color tables, may be downloaded from the IDOT web site at any time.